DOCUMENT RESUME

ED 400 821 IR 055 996

AUTHOR McInnis, Raymond G.
TITLE Why Library Schools Need To Change Their Curriculum.
PUB DATE [95]
NOTE 24p.
PUB TYPE Viewpoints (Opinion/Position Papers, Essays, etc.) (120) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Libraries; Course Objectives; Cultural Literacy; Curriculum Development; *Educational Change; *Educational Philosophy; Futures (of Society); Higher Education; Inquiry; Librarians; *Library Education; Library Schools; Library Services; Literacy; *Strategic Planning
IDENTIFIERS Communication Channels; Course Development

ABSTRACT

Strategic planning is not only concerned with achieving specific goals for the long-term future, but also breaks these goals into short-term intervals and continually assesses the results. Strategic planning can have an impact on how librarians, especially public service librarians, operate in academic settings. If strategic goals and programs are to succeed at institutions of higher education, all people working in areas which serve students must be familiar with these goals and skilled at implementing them. This paper looks at each of these issues. Highlights include: the pedagogy of higher education; the shift from "what" to "how" people learn; learning as a transformation in values; the 1960s movement to reform teaching/learning; student literacy in an academic culture; cultural literacy; communities of discourse; different formats of communication among discourse communities; the essential role of reading skills today; the teaching of writing; evidence that reading and writing are fundamental to inquiry; and assessment. An appendix proposes four library school courses. (Contains 75 references.) (AEF)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 400 821

Why Library Schools Need to Change Their Curriculum

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

by

Raymond G. McInnis
Social Science Librarian
Adjunct Professor of History

Western Washington University

Thirty years ago, in her seminal work on the Monteith College Library Project at Wayne State University, Patricia Knapp[1] observed that, when searching for materials in a library, students "have a basic misconception" of the nature of inquiry. In Knapp's experience, "students look for and expect to find 'the answer to the question' instead of evidence to be examined." Knapp's observation, coupled with the finding of her "Monteith Experiment," helped launch a major shift, indeed, a revolution, in how academic libraries instruct library users, primarily undergraduates. We hasten to add that the revolution is not complete; for us, the revolution in instruction of library users can be said to be complete when it is the normal expectation of student achievement in higher education to possess both the information-seeking skills to enter the library, find the "evidence to be examined" and incorporate these findings into their writing projects.

Generally given the awkward label, "bibliographic instruction," instruction in using libraries is only one of several revolutions in the academic world that can be said to have begun in the 1960s. The most obvious "revolution" in the academic world is of course the "computer revolution," especially in its impact upon the operation of libraries. Revolutionary changes also occurred in our understanding of the pedagogy of higher education,[2] including matters of cognitive styles/learning styles and cultural literacy, especially the importance of literacy in academic cultures.[3] As well as skills in conducting research, "literacy in academic cultures" includes skill in reading academic discourse,[4] understanding the rhetoric of academic discourse[5] and skill in writing[6].

Beginning at the same time, but driven this time by economics, other major changes in higher education were the steep rise in student enrollment, accompanied by an increase in bureaucracy, and the public outcry for accountability in what students did and did not learn in college, a movement that resulted in "the assessment of student outcomes," something that we expect will remain a permanent feature of higher education.[7] To cope with declining funding and issues related to assessment, many institutions have adopted a policy of developing and implementing "strategic plans." Strategic planning is planning concerned with achieving specific

IR055996

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Raymond G. McInnis
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

goals for the long-term future, with summaries of objectives, resources to be used, and methods, but breaking these goals into short-term intervals and assessing results.

Taken together, these matters will continue to have an impact on how librarians, especially public service librarians, operate in academic settings. The logic underpinning our argument is simple: if strategic goals and programs are to succeed at institutions of higher education, all people working in areas which serve students must be familiar with these goals and skilled at implementing them. This paper looks at each of these issues in turn, and, in an Appendix, recommends courses for library school curricula designed to better prepare graduates for careers in academic libraries of today's higher education.

The Pedagogy of Higher Education

According to Joseph Katz and Mildred Henry, in a study sponsored by the American Council on Education, the pedagogy which sprung out of the student teaching/learning reform movement of the 1960s ties teaching to learning, and

(1) enables students to adopt the methods of thinking that characterize the person who generates knowledge, and

(2) establishes the social and emotional conditions for intellectual development.[8]

To achieve these goals in higher education, we recommend that the focus of student learning be shifted toward literacy in academic cultures to include the "craft" quality of scholarship, applying active learning, concern for student "developmental" levels, and implementing the concept of "discourse communities" as settings for teaching and learning across the spectrum of higher education. Literacy in academic cultures would

(1) introduce students to concepts associated with scholarly discourse: the notion of a discourse community; the social construction of knowledge; the shared vocabularies, values and procedures of members of discourse communities and

(2) help students gain more understanding of such features of the genres of text; what audience does to a text; different approaches to organizing articles; the anatomy of introductions to scholarly texts; the function of conclusions; the anatomy of scholarly monographs; achieving authority; achieving consensus; and the distinctive characteristics of primary and secondary sources.

Shift From "What" People Learn to "How" People Learn

What do we know today about "learning" today? From the perspective of the 1970s, while we lacked the precise definition of the nature of student learning articulated by Katz and Henry

above, we thought sufficient evidence existed to claim that a shift in emphasis in student learning in higher education was taking place, and in retrospect can observe that at least we unconsciously possessed a sense of what understanding was needed about pedagogy higher education related to student learning.[9] The many sources we discussed about how students learn included Jerome Bruner[10], David A. Kolb,[11] David P. Ausubel[12] and Kenneth E. Eble.[12]

A Harvard psychologist, Bruner speaks of going beyond the information given as vital part of creativity and that any child can be taught any discipline's method. According to David Kolb, a psychologist currently at Case Western University, characteristics of personality have a greater influence on an individual's preferred learning style than was previously believed. With this evidence, he concludes that "the teaching process should be equally (or perhaps more) concerned with the development of the student's method of learning as with the development of his knowledge of content."

For Ausubel, a cognitive psychologist, psychological meaning, i.e., internalized representation, is always idiosyncratic: "Meaning depends not only on the learner's possession of the requisite intellectual capacities and ideational backgrounds, but also on his particular ideational content. When an individual learns logically meaningful propositions, "he does not learn their logical meaning but the meaning that it has for him." Reconciliation, or matching the logical and psychological structures of knowledge, Ausubel asserts, occurs in an individual's mind in the "terminal stages of subject-matter sophistication." Only after an individual develops mature cognitive capacities and acquires an expert, specialized knowledge of a subject, says Ausubel, does his psychological structure of knowledge in that discipline correspond (although perhaps in somewhat less systematized form) to logical structure of knowledge in that same discipline. Kenneth Eble claims that ideally the teacher's role should be to develop understanding rather than merely to impart knowledge: "Students will insist that learning be conjoined with doing, and the teaching will help make that conjoining possible."

Voices of the 1980s echoing sentiments along these lines include George Posner et al and Kenneth Bruffee. According to Posner, "...inquiry and learning occur against the background of the learner's current concepts." This observation complements Bruffee's notion that in education while

> some believe the purpose of education is to provide students with a world to understand, others believe that the purpose of education is to help students develop ways to understand the world.[14]

Learning as a Transformation in Values

"Learning is a basic human need, as basic as food, shelter, love, sex, and safety, and that it perhaps should have been included in the first level of Abraham Maslow's hierarchy of human needs."[15] So argues Kay Carter, at the Boise Center, Adult Education Department of the University of Idaho. Today, in a democratic, egalitarian society, the need for a nation's citizenry to fully participate and contribute to well-being of the nation has resulted in a recognition that "learning"

achieved during the traditional "school years," that is, "K-12, plus college," is no longer sufficient. Instead, increasingly, this sense of learning is being replaced by another concept of learning: "Lifelong Learning." Indeed, life-long learning is a national goal. In February, 1990, President Bush and the nation's governors adopted new goals for "life-long learning."

According to Larry Mikulecky, a professor of education and head of the Department of Language Education at Indiana University, Bloomington, these goals include the concept of adult literacy and lifelong learning. Of the five goals adopted by President Bush and the governors, Goal 5 states

> By the year 2000, every adult American will be literate and will possess the skills necessary to compete in a global economy and to exercise the rights and responsibilities of citizenship.

In turn, this goal encompasses five specific subgoals:

- Every major American business will be involved in strengthening the connection between education and work.

- All workers will have the opportunity to acquire the knowledge and skills needed to adapt to constantly emerging new technologies, new work methods, and new markets through public and private vocational, technical, workplace, or other innovative programs.

- The number of quality programs that are designed to serve more effectively the needs of the growing number of part-time and midcareer students will increase significantly.

- We will substantially increase the proportion of those qualified students, especially minorities, who enter college, who complete at least two years, and who complete their degree programs.

- The proportion of college graduates who demonstrate an advanced ability to think critically , communicate effectively, and solve problems in areas such as the natural sciences, the social sciences, and the humanities will increase substantially.

As grim as reality demonstrates on how far we are away from achieving these goals, Mikulecky thinks we can be satisfied in at least "a degree of optimism." For him, the current national goal of achieving adult literacy and lifelong learning will improve. "It will direct our attention and help us decide where to focus our limited resources so that we can move forward in those areas." Promising signs include the increasing involvement of business with schools; training in business and in two-year colleges is increasing; larger numbers of minority students (with the exception of black males) are enrolling in colleges, though the percentage increase among minority students enrolling is less than for white students. Finally, Mikulecky notes, higher education, like all others of our society, is under pressure to become more accountable.[16]

On May 14, 1992, Bush also signed the "Lifelong Learning Act of 1992," evidently designed to meet Goal 5 (above).[17] While undoubtedly one will become engaged in an endless debate discussing the issues about any achievement of the goals outlined above, one thing is not debatable: the concept of lifelong learning has been articulated at a national level as a desirable achievement for society, and thus gives credibility to any educational group that adopts it as a goal they seek to help the nation achieve.

Again, "What do we know today about learning?" To answer this question, we must first distinguish between "education" and "training". Learning does not occur in isolation; often it occurs not individually, but collaboratively, in groups or communities.[18] In collaborative learning, retention rates of both knowledge and skills are high. And education, as a form of learning, involves a transformation of values in the individual. Among the many differences between training and education is that while training shapes a person's mind and body to perform certain tasks, education helps the person develop as a human being. Education, then, includes shaping "attitudes," which is more a "gestalt" than a specific set of skills and knowledges. While skills cannot be learned apart from knowledge, both skills and knowledge are an essential part of education -- for example, to become "well-educated" without possessing the skill of reading critically would be difficult if not impossible. Education is not indoctrination. Like love, someone has said, education cannot be forced. Also like love, it requires other people (including role models and mentors) to foster it.

As early as the 1940s, sociologists Kurt Lewin and Paul Grabbe argued that learning involves shifting social and intellectual allegiances and values.[19] Learning this way relieves "emotional stress involved in leaving one community and joining another" and makes even more apt the notion of students becoming literate in an academic culture and being accepted into discourse communities.

In the 1960s, Robert M. Hutchins, longtime president of the University of Chicago and noted critic of American educational practices, argued that a Learning Society would soon be a reality. And in its ideal setting, Hutchins stresses, the Learning Society would be successful in transforming its values in such a way that learning, fulfillment, becoming human, had become its aims and all its institutions were directed to this end. Machines can do for every modern man what slavery did for the fortunate few in Athens. The vision of the learning society can be realized. A world community learning to be civilized, learning to be human, is at last a possibility. Education, Hutchins concludes, may come into its own.

However, Hutchins continues, whether it does or not depends on the transformation of values. All that technology can do is to provide the opportunity. In the transformation of values, education plays a role.[20]

The theme that education includes a transformation in values has occurred to other observers. We will discuss below, in connection with "learning styles", the recommendations of Nancy Dixon, Professor of Curriculum and Instruction, University of Texas at Austin. Lauren A. Sosniak, at the University of Illinois in Chicago, argues that learning, not simply a matter of becoming more knowledgeable and skilled over time, is a matter instead of qualitative transformations of both the individual and that which to being learned. The investment in educational research on "epistemic outcomes" rather than "transformative outcomes" can be seen, she says, in our emphasis on the acquisition of scientific *knowledge* rather than the development of a scientific *attitude*, on the growth of reading skills rather than the cultivation of a love for literature. For Sosniak, a first step in the direction of attending to transformative concerns would require that "we take seriously the long-term nature of learning." The fact that learning is a process that unfolds over a long period is not a matter of debate but neither does it receive much attention.[21]

The 1960s Movement to Reform Teaching/Learning

A movement in student teaching/learning reform emerged from the student unrest of the 1960s.[22] "Red tape, administrative machinery, and all that goes by the name of bureaucracy are," for Robert M. Hutchins, "the inevitable accompaniments of large-scale organization. They tend to assume such importance as to give the impression that the organization exists for their sake, rather than the other way around. The tendency is toward dehumanization."[23] Incensed over the effects of "dehumanization" of university administration on them as individuals, especially with procedures associated with registration for classes, students of the 1960s rallied to the cry of resentment, "Do Not Spindle, Mutilate, or Fold." Concern for "the emergence of human development as a major conception and founding block for a pedagogy that can be both theoretically complex and tested and developed through practice is very recent."[24]

Development theories, and the findings upon which they rest, are very persuasive in converting many people away from the traditional ways of transmitting knowledge, e.g., "knowledge" neatly packaged in a textbook, of targeting the areas of knowledge the student is to "cover." When the idea of student development coalesced during the 1960s, the movement toward reforming student teaching/learning gathered momentum.[25] The movement itself was prepared by such findings about development and learning as Jean Piaget's 1920's studies on cognitive development. From this research Piaget argued that "if students are not yet at the level of formal operational thinking any conventional attempts to present abstract theories to them may fall upon puzzled minds."[26] Other studies are H. A. Murray's[27] explorations of personality, Lois Murphy[28] Ruth Munroe,[29] Theodore Newcomb,[30] Arthur Chickering ,[31] Douglas Heath,[32] Joseph Katz,[33] Nevitt Sanford,[34] Jane Loevinger[35] and William Perry[36].

Together these studies have "theoretical congruence." That is, they all analyze distinctive stages or steps in developmental progression; where they differ is what aspect of student development they focus on.[37] For example, concerned with interpersonal development, Loevinger

finds that the student's emotional capacities are significant factors in any ability to learn, because both the disposition to learn and what one learns depend heavily on one's emotional grasp: objectivity and inventiveness can be hampered by emotional rigidities or by naivete. Perry, like Piaget, focuses on cognitive development. With Perry, our notion that a problem can be approached from more than one perspective can be disconcerting to students -- because reasoning by scholars may drive them into or back to security-seeking dogmatic stances: "I have a right to an opinion too!" Thus by the close of the 1960s, there existed a corpus of empirically-based studies of personality development during college, each describing different aspects of student development.

Student Literacy in an Academic Culture

Increasingly educators agree upon the need to discard linear, developmental conceptions of learning.[38] Better than the metaphors of growth and construction--in the sense that education is "transformation" is the equally familiar one of an "outsider" trying to "get into" a community. For Greg Colomb, both an English professor at the University of Illinois and a nationally-recognized authority on critical thinking and writing instruction, for the outsider to get into a discourse community is to become literate in an academic community--a metaphor that pictures the movement of a learner at first situated outside a bounded field, who then enters and so "joins" the community by acting like its members. (This observation is of course not unlike the one made in the 1940s by Kurt Lewin and Paul Grabbe; see note 19.) The traditional "stair-step model" of learning leaves the student a solitary sojourner, leaving little place for a teacher to stand. The "discourse community model," however, puts us in the middle of the learning process, centerin on the interaction of student (or, better, "apprentice") and teacher (or, better, "mentor") with learning seen as a product of the relationship. These relationships work best when teachers recognize the importance of attending to students' learning styles. "Literacy [in an academic culture] is shared knowledge and therefore necessarily collective."[39]

David A. Kolb claims that because specific learning styles tend to cluster toward certain disciplines, variation exists in how one achieves literacy in a specific academic culture.[40] That disciplines incline toward different styles of learning, he says, comes from an array of evidence. They vary according to their values and traditions, technologies and products, criteria for excellence and productivity, teaching methods, research methods, and methods for recording and portraying knowledge. "Disciplines even show sociocultural variation--differences in faculty and student demographics, personality and aptitudes, as well as differences in values and group norms," and as Colomb argues below, significant differences in the discourse of these same disciplines also prevail. Thus for students, education in a discipline is a process of socialization in the norms of the field which govern the criteria for truth, how it is to be achieved, communicated, and used. Other norms govern personal styles, attitudes, and social relationships. These selection and socialization pressures combine, over time, "to produce an increasingly impermeable and homogeneous disciplinary culture and correspondingly specialized student orientations to learning."

Approaching these disciplines from a learning perspective shows promise of overcoming these difficulties. If we define learning not in a narrow psychological sense of modification of behavior but in the broader sense of acquisition of knowledge, i.e., "How" knowledge is obtained, the problem becomes easier. Every discipline, Kolb stresses "has a prime commitment to learning and inquiry and has developed a learning style that is at least moderately effective." Viewing the acquisition of knowledge in disciplines from a "learning perspective promises a dual reward": a more refined epistemology that defines the varieties of truth and their interrelationships and a greater psychological understanding of how individuals acquire knowledge in its different forms.[41]

"How can learning style information be used to increase learning"? Nancy Dixon proposes that the learner be responsible for using the learning style information and that the instructor assume the responsibility for creating an environment in which the resulting diversity can be accommodated. Using this approach, the understanding and acceptance of learning style information by educators may serve as an impetus to move the learning process from the present instructor-directed approach toward a more learner-directed approach. Such a change, she notes, is in keeping with current theory in cognitive psychology which views the learner as active rather than passive in learning.

Dixon offers five approaches to helping learners use their learning style information: (a) helping individuals understand themselves as learners, (b) encourage individuals to expand their learning styles, (c) using a variety of instructional approaches, (d) creating an environment in which diversity can thrive, and (e) creating a climate in which *collaboration* exists.[42]

Many studies describe teaching and learning styles, but only a 1985 study examines the impact of teaching style and of learning style on the student academic achievement. Conti and Welborn studied mature students, health professionals returning to continuing education courses.[43] They found that teaching style significantly effects student achievement; the pattern of student achievement in the study's results also supports the claim by Asa Knowles et al that (1) that the teacher is the most important variable influencing the learning climate and (2) that the collaborative mode is effective for teaching adults.[44]

Cultural Literacy

Before E. D. Hirsch presented the concept of "cultural literacy" as an essential component of effective comprehension and retention of knowledge by students, regardless of their age or motive for learning, American educators generally followed the model of learning developed by John Dewey, where "too much faith in children's ability to learn general skills from a few typical experiences and too hastily rejected 'the piling up of information'." Regardless of the bulk of criticism leveled at Hirsch's concept, "the evidence remains clear: *skills cannot be learned apart from knowledge*".[45] Others add that cognitive development requires a substantial body of specific knowledge,[46] According to Colomb, Cultural Literacy "faces this fact more squarely than most educators are willing to do."[47]

Communities of Discourse

Inquiry is a social system, knowledge is socially constructed. To understand the nature of inquiry in a particular discourse community we must look at its social dimensions, that is, the qualities of personal craftsmanship and community affiliation inherent in the work of a scholars.[48]

Discourse communities each maintain certain standards and norms. Community members share assumptions about what are appropriate "craft-quality" skills members to possess, as do practitioners in other types of work which demand a combination of applicable skill and creative thought. The craft-quality of inquiry refers to the personal autonomy and responsibility an individual member of a discourse community exercises in conducting research. Matters agreed upon among members of discourse communities generally include the subject matter appropriate for investigation and explanation, and agree on how subject matter is examined, what constitutes 'evidence' and 'validity,' and what rhetorical conventions are followed. John Swales argues that at least six defining characteristics exist that identify a group of individuals as a discourse community.

The craft nature of inquiry becomes clearer by distinguishing between "knowing how" and "knowing that."

> In ordinary life ... as well as in the special business of teaching, we are much more concerned with people's competences than with their cognitive repertoires, with the operations [knowing how] than with the truths [knowing what] that they learn. indeed even when we are concerned with their intellectual excellences and deficiencies, we are interested less in the stock of truths that they acquire and retain than in their capacities to find truths for themselves and their ability to organize and exploit them, when discovered.[50]

For example, we "know that" there was an American Civil War, in 1930 bread cost a nickel a loaf, or survey instruments measure attitudes. These are "facts" we "know." But practicing inquiry requires a different kind of knowledge. One must "know how" to formulate a problem into an answerable question, to choose correct instruments, to interpret the results, and so on. Technical skills and conceptual thought merge. This knowledge cannot be completely described and is learned best in a setting like a discourse community, where disciplinary values, traditions and skills are transmitted, from one generation to the next, by mentors to apprentices.[51]

Jay A. Ward,[52] a composition theorist and writing instructor, claims that "one reason why students frequently have difficulty meeting our expectations as *writers* is that they have not yet learned the assumptions and strategies characteristic of the [discourse] community which expresses itself through academic or scholarly writing."

The concept of discourse community" has been appropriated by composition theorists, in writing research. Composition theorists argue that we must analyze and teach the conventions of

BEST COPY AVAILABLE

academic discourse. The writing-across-the-curriculum movement, when it's done well, seems to have a chance of doing that.[53]

Different Formats of Communication Among Discourse Communities

Using empirical evidence that demonstrates Kolb's claim (above) about differences among disciplines, Colomb argues that academic discourse changes from discipline to discipline, "at every level of text structure, from syntax through global discourse structure." For example, he states, in the "texts" we expect students to produce, the dominant syntactical feature at the level of global discourse is that these texts make points. But, to complicate things even further, discourse points, often called theses or claims, are only a type of point, which is a broader, more general feature. And either where or how points are made changes from discipline to discipline, and what counts as a point worth may shift from discipline to discipline.[54]

The text of discourse communities incorporate different schemata. In reading a scholarly text, readers in a discourse community comprehend "conventionalized text-types" by a familiarity with the different schemata the text contains.[55] Schema theory concerns the way in which various types of background knowledge affect our understanding and recall. Schema (the plural form is schemata) relates to metaphor, mental map, advance organizers, cognitive devices we use to recall or incorporate ideas.

Two types of schemata are distinguished: (1) formal schemata and (2) content schemata. Formal schemata deal with a text's rhetorical structure. Formal schemata incorporate background knowledge of the formal, rhetorical, organizational structures of different types of texts--here readers are said to possess background knowledge about or expectations of such factors in texts as genre, structure, audience, purpose. For example, in a discipline, say Psychology, an "empirical" article reports "new knowledge," a feature that can be detected by the article's four distinct sections. Content schemata, on the other hand, deal with a text's knowledge content. Content schemata incorporate such background knowledge of the content or subject matter of a text as specialized vocabulary or how the article is grounded in the existing literature (the "review of literature") of a specific research field.

Cognitive skills depend on formal and content schemata specific to a task at hand. Once we acquire the relevant knowledge, the skill follows. Experts perform better than novices not because they have more powerful and better oiled intellectual machinery, but because they have more relevant and quickly available information. What distinguishes good readers from poor ones is simply the possession of a lot of diverse, task-specific information.

Why is a familiarity with schema theory important to librarians? We answer this question with another: "How does the scholar demonstrate an article contains new knowledge?" By showing in the introduction, in the "review of research," the main studies in the field. Having this

background knowledge, whether scholar, librarian, or student, the review of research in a recent empirical article on specific topic identifies the key articles in this narrow field.

The Essential Role of Reading Skills Today

What do we know about reading today? As cited by Paul Kameen, Elaine P. Maimon, a pioneer in the writing-across-the-curriculum movement, argues that a central concern of reading today is importance of vocabulary to meaning. Studies on processes involved in reading (and writing) to show how, with language, individuals make meaning out of text. Readers bring schemata to bear upon what they are reading. To achieve understanding, readers select the most appropriate schemata for making sense of the incoming words. Reading, then, says Kameen, a composition theorist and writing instructor, "becomes as much an act of production--rather than reproduction--as is writing; it becomes in fact a manner of writing, just as, conversely, writing becomes a manner of reading."[56]

Meaning tends to break down at the word level. Less proficient students, who need vocabulary, struggle to comprehend "word-by- word." If appropriate schemata are not quickly available, and the reader is forced to struggle to make sense of words at the time of reading, the limits of short-term memory are quickly reached, with the process necessarily painfully restarted over and over. Vocabulary is vital to the operation.[57]

The Teaching of Writing

During the decades of the 1970s and 1980s, a revolution occurred in the teaching of writing.[58] First, the traditional linear-style was discarded--the idea, derived from classical rhetoric, was that writers started at the beginning and progressed in a straight line to the end. The linear-style was replaced with a more flexible, experimental approach, one that incorporates ideas from what we know about learning styles, that each of us approaches writing tasks differently.

What are we finding out about how people write? Maxine Hairston, has put the matter as clearly and precisely as any commentator. Hairston, both a composition theorist and writing instructor, says first that "writing is an act of discovery for both skilled and unskilled writers." In general, whether experienced or novice, when they begin to write, writers have only a partial notion of what to say or how to say it. Ideas develop in the process of writing. Topics develop intuitively, not mechanically. A second truth is that, rather than linear, moving smoothly in one direction from start to finish, writing is "messy, recursive, convoluted and uneven. Writers write, plan, revise, anticipate, and review throughout the writing process, moving back and forth among the different operations involved in writing without an apparent plan." Experienced writers, she concludes, are not surprised at these findings, even though "they contradict the traditional paradigm that has dominated writing textbooks for years."

Some critics even argue that increasingly we will be seeing an integration of reading and writing, something hinted at by Paul Kameen (above). As further evidence, in the same chapter, Kameen cites another statement by Elaine P. Maimon:

> (a) writing and reading are inseparable activities; (b) writing and reading are central to learning in all disciplines; (c) writing and reading are essential modes of discovery.[59]

Both Reading and Writing Fundamental to Inquiry

With this brief overview of schema theory, reading, and writing, we will present evidence from research on both reading and writing which we find fundamental to inquiry:

1) Readers contribute more information to interpreting a text than the print on the page.[60]

2) Writers incorporate more into a text than print on the page.[61]

3) Readers do not use all information provided by the text.[62]

4) Intellectual structures are built by the learner rather than taught by the teacher.[63]

1) *Readers can be said to contribute more information to interpreting a text than the print on the page when what people understand from the text occurs as they assign new evidence to membership with an appropriate group of concepts already stored in their memories.* Cognitive psychologists argue that, to comprehend, we attach new ideas to old ones.[64] Carol Schneider, Vice President, Association of American Colleges, points out, as teachers, we need to spend more time on assignments, less time on content; especially we need to know more about how students make meaning.[65] In particular, we need to connect our students' existing intellectual frameworks to what we teach. Her example: Students' twentieth century religious views help them understand medieval religion.

Drawing his evidence from a variety of sources, Colomb has done us a valuable service in articulating why everyone in the academy who works with students should be aware of what is happening in reading; his title, to use the vernacular, "puts the matter right up front": "Cultural Literacy and the Theory of Meaning: Or, What Educational Theorists Need to Know About How We Read." When reading, "meaning," Colomb[66] argues, "does not reside in words, sentences, paragraphs, of even entire passages considered in isolation." When we analyze "connected discourse" artificially "out of context," we end up with "an incomplete understanding of the level's meaning in use,"[67] Instead, continues Colomb, language provides readers with "a skeleton, a blueprint for the creation of meaning."

> Such skeletal representations must then be enriched and embellished so that they conform with the understander's preexisting world views and the operative purposes of understanding at a given time.

> This process of knowledge-based, contextually influenced, and purposeful enrichment in comprehending language is what is referred to as "construction."[68]

For Dillon

> The meaning of the text is not on the page to be extracted by readers; rather . . . the written marks on the page more resemble a musical score than a code requiring deciphering.

For E. D. Hirsch

> The new picture . . . brings to the fore the highly active mind of the reader, who is now discovered to be not only a decoder of what is written down. . . . The explicit meanings of a piece of writing are the tip of an iceberg of meaning: the larger part lies below the surface of a text and is composed of the reader's own relevant knowledge.

2) *Writers incorporate more into a text than print on the page*. In a sense, this principle mirrors the previous one. The elements writers incorporate into their text are almost too numerous to mention, but they include internalized structures and levels of formality, shorthand referents such as allusions and citations, vocabulary choice, and a vast storehouse of background information. As Ann Berthoff[69] has persuasively argued, "It is in the context of writing where meaning is made," a point that parallels Elaine Maimon's notion (above) about the importance of vocabulary to meaning. In addition, as mentioned above, writers employ consciously and unconsciously schema, rhetoric, and specific critical thinking skills. Writers make certain assumptions about what readers know, or, put another way, writers are aware of who their audience is.

3) *Readers do not use all information provided by the text.*[70] The cognitive psychologist, Kenneth Goodman, for example, describes reading as a "psycholinguistic guessing game" in which the "reader reconstructs, as best as he can. a message which has been encoded by a writer as a graphic display" He views this act of construction of meaning as being "an ongoing, cyclical process of sampling from the input text, predicting, testing and confirming or revising those predictions."

4) *Intellectual structures are built by the learner rather than taught by the teacher*. Students need the opportunity of engaging actively in the processes of thinking that lead to the production of intellectual structures. They need help in experiencing "intuitive" hunches, in establishing, questioning, sharing, and interpreting. Without building the intellectual structures themselves, students tend to lump separate thinking processes together, unaware of the important role played by each process in the development of distinct intellectual configurations.[71]

Assessment is Here to Stay

In the 1960s students protested not just the impersonality of their education, but also the contents of education; not just the relevance of their studies to their lives and to their society, but also the epistemological assumptions undergirding the pursuit of knowledge. While the student

movement all but disbanded around 1970, the initiative to dislodge the established curriculum and ways of teaching continued. For one, the steep increase in both the numbers of colleges and students attending them compelled institutions to take a "salesman" approach, i.e., first attract and then retain large numbers of students, a shift in orientation that came to view students as customers and consumers.

This shift in orientation represents a new stage in the evolution of the university, in effect a break in an intellectual tradition that has been continuous since the founding of the European universities. For better or worse, especially as it results in an exponential increase in students and the concomitant increase in a bureaucratic apparatus needed to process them, this shift "has led to a debasement of what is expected of students and to diminished intellectual efforts by faculty and students."[72] Add to this observation of Robert M. Hutchins:[73] "In the 1960s, all over the world, the ideal of a university, cherished for almost 1,000 years, appeared to be fading, to be replaced by the notion of the university as a nationalized industry." Clark Kerr, former president of the University of California at Berkeley and a leading observer on American higher education, probably articulated this shift best when he published ***The Uses of the University***.[74] In this book he coined the term, "multiversity," a coinage that Kerr perhaps later regretted.

Also with these developments in higher education came an outcry from the general public (channeled through their state legislators) for more "accountability" for (in crude terms) the appropriate use of their tax dollars for the best education for their children money could buy. Legislatures were also faced with spreading tax dollars to increasing numbers of needs, the result being less dollars for more agencies to fund. The solution: Assessment.

In Higher Education in the U.S. today, "Assessment" is an important concept. Symptomatic of declining government revenues, Assessment means reduced funding for higher education. To cope with reduced budgets, institutions in higher education "tighten their belts." Institutions work with reduced budgets, but continue to declare high expectations of achievement in standards of undergraduate education.

As part of Assessment in U.S. universities, an expectation exists that we now look at student outcomes. Some institutions, for example, measure such student outcomes as skill in "writing" and "mathematics". Institutions now have methods of "tracking" progress of students in achieving skills in these two areas. One of these outcomes is that students have the Information-Seeking Skills needed for Life-Long Learning.

Peter T. Ewell, a senior associate at the National Center for Higher Education Management Systems, Boulder, Colorado, declares that "A new note of insistence [on 'accountability' in higher education] is pervading public rhetoric; ... it will likely be the dominant theme of assessment policy for the foreseeable future."[75] The 1980s push toward state-mandated outcomes assessment came when state legislatures, responding to sentiments expressed by the voting public, began to insist that higher education is a "strategic investment, enabling the state to build its economy and

infrastructure by developing manpower and attracting new industry. From this perspective, accountability becomes less a question of equitable and efficient operations than documenting a concrete return on investment."

Conclusion

Thirty years ago, Patricia Knapp complained of students "basic misconception of the nature of inquiry." In the library, they look for answers instead of evidence to be examined. Students lack of skills in inquiry comes from a lack of understanding of the nature of scholarly discourse. A partial corrective for what students don't understand about scholarship is the student teaching/ learning reform movement of the 1960s. This movement comes out of the "theoretical congruence" of the findings about development and learning by psychologists throughout the twentieth century. Still incomplete, it ties teaching to learning, enables students to adopt methods of thinking characteristic of scholars in the field, and helps establish the social and emotional conditions students need for intellectual development.

With this movement, the focus of student learning is shifting toward concern for "how" students learn as well as "what" students learn. This shift in how students learn emphasizes literacy in academic cultures, the "craft" quality of scholarship, applying active or collaborative "learning" techniques, concern for student "developmental" levels, and implementing the concept of "discourse communities." Literacy in academic cultures introduces students to concepts associated with scholarly discourse: that inquiry is a social system; that knowledge is socially constructed; that members of discourse communities share assumptions about what are appropriate skills members should possess.

To become literate in an academic cultures means students begin to understand such features of discourse as the genres of text; what audience does to a text; the anatomy of scholarly texts; how "authority" is achieved; how "consensus" is achieved; and the distinctive characteristics of primary and secondary sources.

And education, as a form of learning, unlike "training," involves "transformation". The difference between training and education is that training shapes a person's mind and body to perform certain tasks, but education helps shape and transform attitudes and values. To a certain extent in recognition of the transformational power of education, the concept of lifelong learning has been articulated as a national goal.

Numerous critics, both inside and outside higher education, think a need exists to discard linear, developmental conceptions of learning. In replacement, they see another concept of learning, that of learner as "outsider" trying to "get into" a community.

For the outsider to get into a discourse community is to become literate in an academic community, to become comfortable in a mentor/apprentice relationship. In collaborative learning,

retention rates of both knowledge and skills are high. These relationships work best when teachers recognize the importance of attending to students' learning styles.

Specific learning styles tend to cluster toward certain disciplines and variation exists in how one achieves literacy in a specific academic culture. Disciplines vary according to their values and traditions, technologies and products, criteria for excellence and productivity, teaching methods, research methods, and methods for recording and portraying knowledge. Learners should be responsible for using the learning style information and instructor responsible for creating an environment in which different learning styles can be accommodated.

Skills cannot be learned apart from knowledge. Cultural Literacy, in the view of many, "faces this fact more squarely than most educators are willing to do."

To a large degree dependent upon cultural literacy, an important skill, perhaps **the** important skill, is reading. During the decades of the 1970s and 1980s, a revolution occurred in our understanding of how people read. Since academic discourse changes from discipline to discipline, we now recognize that the texts of discourse communities incorporate both different schemata and different vocabularies. Central to reading skills today is the importance of vocabulary to meaning. Readers bring schemata to bear upon what they are reading. In reading a scholarly text, readers in a discourse community comprehend rhetorical conventions specific to that community through familiarity with the different schemata the text contains. Schema theory concerns the way in which various types of background knowledge affect our understanding and recall. Schema relates to metaphor, mental map, advance organizers, cognitive devices we use to recall or incorporate ideas.

During the same decades, a revolution also occurred in the teaching of writing. The traditional linear-style of teaching writing was replaced with a more flexible, experimental approach, one that incorporates ideas from what we know about learning styles.

Together, these new approaches to teaching, to learning, to reading, and to writing, add up to a major revolution in our understanding of what is an--one hesitates to use the word--**efficient** method for education. Unfortunately, our expectations are not matched by "results," and a public protest has called for "accountability in higher education." The instrument to enforce accountability is called "Assessment." With it, institutions now have methods of "tracking" progress of students in achieving appropriate outcomes in higher education.

Academic libraries have responded to the computer revolution by incorporating automation processes into their operations. Few question the success libraries have had in these endeavors. But academic libraries obviously need to respond to these other, perhaps more important "revolutions," that specifically identify the students' need for information-seeking skills. Thus curriculum committees in our schools of librarianship need to be concerned and anticipate these changes before we are left behind.

Appendix

Courses Proposed for a Revised Library School Curriculum

First Proposed Course:

Learning Styles and Information Seeking

Grounded in Cognitive Psychology, "Learning Styles and Information-Seeking," would address differences in Learning Styles: (1) General Issues in Learning Styles; (2) Gender Difference in Learning Styles; and (3) Cultural Differences in Learning Styles.

Second Proposed Course:

Ways of Thinking in the Discipline

Grounded in Text Analysis and Critical Thinking, the second proposed course, would address processes of understanding and explaining in the disciplines, including principles incorporated in the three "R"s of Inquiry: (1) Research, (2) Reading and (3) Writing. This course would make library school students aware of: (1) Research Traditions in Discipline; (2) Disciplinary Approaches to Discourse; (3) Different Formats of Communication

Third Proposed Course:

Research Traditions in Disciplines

Science: Mathematics, Physics, Chemistry, Biology, Geology; (1) Conceptual, Theory Driven; (2) Emphasizes Objectivity; (3) Cumulative; (4) Paradigmatic; (5) Rigorous Methodology; (6) Resents Conflicting Explanations

Social Sciences: Anthropology, Political Science, History, Sociology, Geography, Psychology; (1) Conceptual, Theory Driven; (2) Attempts Cumulation; (3) More Accommodating to Conflicting Explanations.

Humanities: Literature, Philosophy, Religion, Art, Music;(1) Conceptual, Theory Driven; (2) Accommodates Conflicting Explanations; (3) Aggregative

Fourth Proposed Course:

Disciplinary Approaches to Discourse;

a. Science: (1) socially constructed; (2) systematic; (3) quantitative.

b. Social Sciences: (1) socially constructed; (2) systematic; (3) quantitative and qualitative.

c. Humanities: (1) socially constructed; (2) qualitative; (3) analytical.

Bibliography and Notes

1. Patricia Knapp, Monteith College Library Experiment (New York: Scarecrow, 1966).

2. Joseph Katz and Mildred Henry, Turning Professors Into Teachers: a New Approach to Faculty Development and Student Learning (New York: Macmillan Publishing Company for the American Council on Education, 1988).

3. This paper treats cognitive style and learning style as equivalent; L. Adrianne Bonham, "Learning Style Use: In Need of Perspective," Lifelong Learning 11 (February 1988):14-19] usefully distinguishes between "learning style" and "cognitive style."

4. John Swales, Genre Analysis: English in Academic and Research Settings. (Cambridge: Cambridge University Press, 1990); Greg Colomb, Where Should Students Start Writing in the Disciplines? (St. Louis, MO: 30th Annual Meeting of the Conference on College composition and Communication, March 1988) (ED 297 341).

5. John S. Nelson, Allan Megill, and Donald N. McCloskey, "Rhetoric of Inquiry," John S. Nelson, et al, eds. The Rhetoric of the Human Sciences: Language and Argument in Scholasrship and Public Affairs (Madison: University of Wisconsin Press, 1987), pp. 1-?; (the whole volume is worth perusing for its insights into the rhetorical nature of schoalrly discourse); R. H. Roberts, and J. M. Good, eds., The Recovery of Rhetoric: Persuasive discourse and Disciplinarity in the Human Sciences (Charlottesville, VA: University Press of Virginia, 1993); and Charles Bazerman, Shaping Written Knowledge: the Genre and Activity of the Experimental Article in Science (Madison, Wis. : University of Wisconsin Press, 1988).

6. Maxine Hairston, "Winds of Change: Thomas Kuhn and the Revolution in the Teaching of Writing," Composition Compostion and Communication 33 (February 1982):76-88; Greg Colomb, "Cultural Literacy and the Theory of Meaning: Or, What Educational Theorists Need to Know About How We Read.," New Literary History 20 (Winter 1989):411-450; see also Gary Tate, ed., Teaching Composition (Dallas: Texas Christian University, 1987).

7. Peter T. Ewell, "Assessment and Public Accountability: Back to the Future," Change 23 (November/December 1991):14.

8. Katz and Henry, Turning Professors Into Teachers, pp. 1-2.

9. Raymond G. McInnis, New Perspectives for Reference Service in Academic Libraries (Westport, CT: Greenwood Press, 1978), pp. 27-50.

10. Jerome S. Bruner, "Going Beyond the Information Given" In Contemporary Approaches to Cognition, A Symposium held at the University of Colorado. (Cambridge, Mass.: Harvard University tress, 1957), pp. 41-69; and On Knowing (Cambridge, Mass.: Belknap Press of Harvard University Press, 1964), pp. 43-69.

11. David A. Kolb, "Learning Styles and Disciplinary Differences, Arthur W. Chickering, ed., The Modern American College (San Francisco: Jossey-Bass, 1981), pp. 233-234.

12. David P. Ausubel, "Some Psychological Aspects of the Structure of Knowledge." In Education and the Structure of Knowledge (Fifth Annual Phi Delta Kappa Symposium on Educational Research). (Chicago: Rand McNally, 1964), pp. 221-249.

13. Kenneth E. Eble, Professors as Teachers(San Francisco: Jossey-Bass, 1972).
14. George Posner, K. A. Strike, and P. W. Hewson, "Accommodation of a Scientific Conception: Toward a Theory of Conceptual Change," Science Education 66 (1982):212; Kenneth Bruffee, "Liberal Education and the Social Justification of Belief," Liberal Education 68 (1982):96-97).

15. Kay Carter, "Lifelong Learning: Fact or Fantasy," Adult Learning 2 (September 1990):3.

16. Larry Mikulecky, "National Adult Literacy and Lifelong Learning Goals: Fifth National Education Goal--Adult Literacy," Phi Delta Kappan 72 (December 1990):304-309. However, life-long learning as a national goal is not new; see, for example, Richard E. Peterson and Associates, Lifelong Learning in America: An Overview of Current Practices, Available Resources, and Future Prospects (San Francisco, CA:Jossey-Bass, 1979), pp. 322ff.

17. "Message to the Congress Transmitting Proosed Legislation of Lifelong Learning." Weekly Compilation of Presidendtial Documents 28 (May 18 1992):863.

18. Bruffee "Liberal Education and the Social Justification of Belief," pp. 96-97.

19. Kurt Lewin and Paul Grabbe, "Conduct, Knowledge, and the Acceptance of New Values." Journal of Social Issues, 1 (1945):53-64.

20. Robert M. Hutchins, The Learning Society (New York: Praeger, 1968), pp 134-136.

21. Lauren A. Sosniak, "The Nature of Change in Successful Learning," Teachers College Record 88 (Summer 1987):519-535. Discussing over thirty studies, the last third of Saran B. Merriam's, "Adult Learning and Theory Building: a Review," Adult Education Quarterly 37 (Summer 1987):187-198, discusses educational theories based on changes in consciousness.

22. Katz and Henry, Turning Professors Into Teachers, pp. 1-2.

23. Robert M. Hutchins, The Learning Society (New York: Praeger, 1968), pp 117ff.

24. Katz and Henry, Turning Professors Into Teachers, p. 2.

25. Katz and Henry, Turning Professors Into Teachers, p. 2.

26. H.E. Gruber, and J.J. Voneche, eds. The Essential Piaget: An Interpretive Reference and Guide. (New York: Basic Books, 1977).

27. H. A. Murray, Explorations in Personality. (New York: Oxford University Press, 1938).

28. Lois Murphy, and H. Ladd, Emotional Factors in Learning. (New York: Columbia University Press, 1944).

29. Ruth Munroe, Teaching the Individual. (New York: Columbia University Press, 1942).

30. Theodore Newcomb, Personality and Social Change. (New York: Dryden Press, 1943).

31. Arthur W. Chickering, Education and Identity. (San Francisco: Jossey-Bass, 1969).

32. Douglas Heath, Growing Up in College. (San Francisco: Jossey-Bass, 1968).

33. Joseph Katz, and associates. No Time for Youth: Growth and Constraint in College Students. (San Francisco: Jossey-Bass, 1968).

34. Nevitt Sanford, The American College. (New York: Wiley, 1962).

35. Jane Loevinger, Ego Development. (San Francisco: Jossey-Bass, 1976). 36. William Perry, Forms of Intellectual and Ethical Development in the College Years. (New York: Holt, Rinehart and Winston, 1970).

37. Katz and Henry Turning Professors Into Teachers, p. 2.

38. Greg Colomb, "Cultural Literacy and the Theory of Meaning," p. 413.

39. Jay A. Ward, "Cognitive Development as Literacy." (Minneapolis, MN: Paper Presented at the 30th Annual Meeting of the Conference on College Composition and Communication, 1985), p. 7. ED 280 074.

40. David A. Kolb, "Learning Styles and Disciplinary Differences, Arthur W. Chickering, ed., The Modern American College (San Francisco: Jossey-Bass, 1981), pp. 233-234.

41. David A. Kolb, "Learning Styles and Disciplinary Differences." For accounts of differences of how disciplines know, achieve truth, and so on, see chapters of Arthur W. Chickering, ed., The Modern American College (San Francisco: Jossey-Bass, 1981); Katz and Henry, Turning Professors Into Teachers: a New Approach to Faculty Development and Student Learning; and Elliot Eisner, ed., Learning and Teaching the Ways of Knowing: Eighty-fourth Yearbook of the National society for the Study of Education (Chicago: University of Chicago Press, 1985).

42. Nancy M. Dixon, "The Implementation of Learning Style Information," Lifelong Learning 9 (November 1985): 14-18, 26-27; a similar proposal are made others: L. Adrianne Bonham, "Learning Style Use: In Need of Perspective," pp. 14-19, usefully distinguishes between "learning style" and "cognitive style." Peggy Stuart, "Learning Style Theories," Personnel Journal 71 (September 1992):91, discusses Genie Z. Laborde's notions of neurolinguistic programming as presented in Influencing With Integrity, (Palo Alto, CA: Science and Behavior Books, 1983), the "seven intelligences" in Howard Gardner's Frames of Mind: the Theory of Multiple Intelliences (New York: Basic Books, 1983) and David A. Kolb's Experiential Learning: Experience as the Source of Learning (Englewood Cliffs, NJ: Prentice-Hall, 1984.

43. Gary J Conti and Ruth B. Welborn, "Teaching-Learning Styles and The Adult Learner," Lifelong Learning 9 (June 1986):20-24. Welborn's dissertation was done in 1985; as cited by Conti and Welborn, p. 20.

44. Asa Knowles, ed., Handbook of College and University Administration (New York: McGraw-Hill, 1970), as cited by Conti and Welborn, p. 20.

45. Greg Colomb, "Cultural Literacy and the Theory of Meaning," p. 413; emphasis added.

46. Donald Lazere, "Critical Thinking in College English Studies." (Urbana Illinois: ERIC Clearinghouse on Reading and Communication Skills, 1987). ED284275.

47. Colomb, "Coltural Literacy and the Theory of Meaning," p. 413.

48. In our investigation of the concept, the first scholar to discuss discourse communities is Thomas S. Popkewitz, "Craft and Community as Metaphors for Social Inquiry Curriculum," Educational Theory 27 (Fall 1977).

49. Swales, Genre analysis, pp. 21-32.

50. Gilbert Ryle, The Concept of Mind (London: Hutchinson, 1949; repr. New York: Barnes and Noble, 1960, p. 28.

51. The following is adapted from Popkewitz, "Craft and Community as Metaphors for Social Inquiry Curriculum." The most accesible source of the "tacit" nature of scholarship is Michael Polanyi, Personal Knowledge (Chicago: University of Chicago Press, 1958).

52. Jay Ward, "Cognitive Development as Literacy," p. 4. Substitute either **readers** or **researchers** for "writers," and one ends up saying the same thing. Together, **Reading, writing** and **research** constitute the three "R"s of inquiry, and together comprise the essential components of literacy in academic cultures. With schema theory, then, the three "R"s of inquiry converge. For an elaboration, see Raymond G. McInnis and Dal Symes, "Running Backwards From the Finish Line: New Concepts for Bibliographic Instruction," Library Trends 39 (Winter 1991):223-237.

53. Swales, Genre Analysis, pp. 21-32.

54. Colomb, Where Should Students Start Writing in the Disciplines?, pp 2ff.

55. For a more detailed account and extensive references, see Raymond G. McInnis and Dal Symes, "Running Bacwards From the Finish Line."

56. Paul Kameen, "Coming of Age in College Composition," in Anthony R. Petrosky and David Bartholomae, eds., The Teaching of Writing: Eighty-fifth Yearbook of the National Society for the Study of Education (Chicago: University of Chicago Press, 1986), p. 183.

57. See also Alan C. Purves and Olive Niles, eds., Becoming Readers in a Complex Society: Eighty-third Yearbook of the National Society for Education (Chicago: University of Chicago Press, 1984).

58. Hairston, "Winds of Change: Thomas Kuhn and the Revolution in the Teaching of Writing," p. 851.

59. Kameen, "Coming of Age in College Composition," p. 183-184.

60. A. Raimes, Techniques in Teaching Writing (New York: Oxford University Press, 1983).

61. E. D. Hirsch, Cultural Literacy (Boston, MA: Houghton Mifflin, 1987).

62. K. S. Goodman, "Reading: A Psycholinguistic Guessing Game," Journal of the Reading Specialist 6 (1967):126-135.

63. Seymour Papert, Mindstorms: Children, Computers, and Powerful Ideas (New York: Basic Books, 1980), p. 19.

64. For an elaboration, see note 1, p. 235, McInnis and Symes, "Running Backwards From the Finish Line."

65. Carol Schneider, "Codes, Cultures, and Connections: The Multiple Meanings of Critical Thinking as a Goal of Liberal Learning" (Chicago, IL: Unpublished paper presented at the Conference on Critical Thinking and Context: Intellectual Development and Interpretive Communities, 1987).

66. Colomb, "Cultural Literacy and the Theory of Meaning: Or, What Educational Theorists Need to Know About How We Read," pp. 418-419.

67. Which for us is analogous to Abraham Kaplan's explanation of the difference between the notion of "the concept of discovery," and "the concept of justification," where Abraham Kaplan uses the term "logic-in-use" to explain how our minds manage to make sense out of something new. For more information, see McInnis, New Perspectives.

68. For supporting evidence, Colomb cites several authorities. p. 445, including George F. Dillon, Constructive Texts (Bloomington, Ind.: University of Indiana Press, 1981); Hirsch, Cultural Literacy, pp. 33-24; a fairly up-to-date review is Judith Orasanu, ed., Reading Comprehension: From Research to Practice (Hillsdale, NJ: Lawrence Erlbaum, 1986).

69. Ann Berthoff, The Making of Meaning (Upper Montclair,NJ: Boynton/Cook, 1981).
70. Goodman, "Reading: A Psycholinguistic Guessing Game."

71. Katz and Henry, Turning Professors Into Teachers, p. 32.

72. Katz and Henry, Turning Professors Into Teachers, p. 4.

73. Hutchins, The Learning Society, pp. 105 ff.

74. Clark Kerr, The Uses of the University (Cambridge: Harvard University Press, 1963).

75. Peter T. Ewell, "Assessment and Public Accountability: Back to the Future," Change 23 (November/December 1991):14.